Calendar No. 574

97TH CONGRESS, 2d Session } SENATE { REPORT No. 97-405

AUTHORIZATION FOR RAILROAD REHABILITATION AND IMPROVEMENT FINANCING

MAY 19 (legislative day, MAY 11), 1982.—Ordered to be printed

Mr. PACKWOOD, from the Committee on Commerce, Science, and Transportation, submitted the following

REPORT

[To accompany S. 2430]

The Committee on Commerce, Science, and Transportation, to which was referred the bill (S. 2430) to provide authorization of appropriations for railroad rehabilitation and improvement financing, and for other purposes, having considered the same, reports favorably thereon with an amendment in the nature of a substitute and recommends that the bill do pass.

PURPOSE

The purpose of this legislation is to extend the authorization for the redeemable preference share program for three years, until September 30, 1985, and to provide $100 million for the program.

BACKGROUND AND NEED

Congress established two railroad financial assistance programs pursuant to the Railroad Revitalization and Regulatory Reform Act of 1976 (4R Act). This was back when the railroad industry was in serious financial trouble and the railroad network was in need of repair and improvement. The first of these programs, under section 505 of the 4R Act, is known as the redeemable preference share program, and provides low interest loans for the rehabilitation, improvement, and acquisition of railroad track, signals, and facilities. It also provides assistance for the rehabilitation and acquisition of lines abandoned by the bankrupt Milwaukee and Rock Island railroads. The second program, under section 511 of the 4R Act, is a loan guarantee program, and provides assistance for the rehabilitation, improvement, and acquisition of railroad equipment and facilities.

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When Congress established these programs in 1976, it determined that it was necessary to provide financial assistance for a limited period of time while more permanent solutions to the industry's financial difficulties were worked out. In 1980, Congress passed the Staggers Rail Act in order to improve the financial health of the industry through reduced regulation by the Interstate Commerce Commission. At the same time, it extended the authorization for the redeemable preference share program through the end of fiscal 1982.

With the authorization for the preference share program due to expire this year, the Committee undertook to examine the need to continue some form of railroad financial assistance in the future. As part of this examination, the Committee considered the effectiveness of the assistance programs to date, the financial status of the industry, outstanding projects, and appropriate future funding levels.

The Committee believes that the preference share and loan guarantee programs have been effective in helping the railroad industry through a difficult financial period and in netting improvements in railroad services and operations. In particular, the programs have permitted some marginal, but important, railroads to eliminate deferred maintenance on their mainlines and to provide safer, more efficient rail service to shippers. In the case of some bankrupt railroads, like the Boston and Maine and the Milwaukee Road, the programs have helped them resume their positions as competitive railroads. The programs have also ensured that States and local communities threatened with the loss essential railroad service due to the bankruptcies of the Milwaukee and Rock Island railroads have been able to maintain such service.

While the Committee believes these programs have been effective in the past, that reason alone would not justify continuing their existence. Other factors must be taken into account, including the ability of the industry to now generate private sector financing. In this regard, it is clear that the financial condition of the industry is better than it was back in 1976. Further, due to changes made by the Staggers Rail Act, the industry is and will continue to be better able to improve its financial condition through more competitive rail services and profitable rates. Some members of the industry have also been helped by the Economic Recovery Tax Act of 1981.

However, while the Committee is encouraged by improvements in the industry's financial status, the Committee is not convinced that some form of financial assistance is no longer needed. This is due in part to the fact that the Staggers Rail Act is still new, and that the benefits are just starting to take effect. Further, the railroad industry has been hard-hit by the current decline in the economy. This has been coupled by uncertainty over the future of benefits earned under the 1981 Tax Act.

The Committee is also concerned about the fate of a number of highly meritorious railroad projects, which may not be completed without continued financial assistance. This includes a number of projects for which appropriations have been earmarked but not yet obligated. It also includes the St. Louis Metro Area Rail Gateway Enterprise, which is a $120 million project to restructure and modernize the railroad facilities in the St. Louis area.

The St. Louis rail gateway is the second largest in the country, and an essential component of the national transportation system. Nine class I railroads operate in the gateway area, and over 2 million rail cars traverse it annually. Despite its importance, the gateway has not functioned as efficiently as it should. This is due in part to the fact that the rail yards and the major bridge crossing the Mississippi River are highly antiquated. Further, the rail yards are scattered throughout the metropolitan area, which means traffic must be shuttled from one yard to another at great loss of time and money.

Until recently, efforts to find a solution to these problems and to make improvements in the St. Louis gateway have not met with success. There have been several reasons for this. First, it was not possible to improve the gateway on a piecemeal basis, that is, one railroad at a time. Further, due to competitive pressures and the varying profitability of the railroads involved, it was not possible to put together a joint project involving private financing. The matter of private financing was also complicated by the fact that changes in the gateway entailed private benefits, as well as public benefits in the form of reduced rail community conflicts and economic development of a distressed urban area.

Last year, Congress approved $20 million in preference share financing for the St. Louis Gateway project. This appears to have been the catalyst for convincing the railroads and others to join in this project. While the Committee is pleased with the response to this initial funding it is concerned that the $120 million project will not be completed without additional financial assistance. The Committee believes that additional assistance would provide the necessary incentive for overcoming any remaining competitive barriers among the railroads. It also would ensure the participation of those railroads which lack access to sources of private financing in the amounts needed, or which could not repay such loans at market interest rates. It would also provide clear recognition of the assortment of public and private benefits associated with this project.

One of the final questions that the Committee needed to address dealt with future funding levels. Currently, $1.4 billion is authorized for the redeemable preference share program; $599 million appropriated; and $470 million obligated. While the Committee believes there is a clear need for continued funding for this program, such funding should be reduced from years past. This is possible in large part because most major rail projects for which this program was intended have now been funded. It also is desirable from the standpoint of trying to reduce Federal spending except in those cases where absolutely necessary.

One billion dollars has been authorized for the loan guarantee program; $248 million has been committed to approved projects. The Committee is not recommending any changes in the funding levels for this program.

LEGISLATIVE HISTORY

On February 11, 1982, Senator Pressler introduced on behalf of himself and Senator Danforth, S. 2108, a bill to extend the authorization for the redeemable preference share program through fiscal 1985. The Subcommittee on Surface Transportation held a hearing on

March 15, 1982 to consider S. 2108 and the need to continue the preference share program and the loan guarantee program in the future.

On April 22, 1982, Senator Danforth introduced S. 2430, a new bill to extend the authorization for the redeemable preference share program and to make other changes in the statute dealing with this program. Joining him as cosponsors of the bill were Senators Packwood, Kassebaum, Percy, Dixon, Exon, Cannon, and Pressler. The full Committee met in open executive session on April 29, 1982 to discuss and mark up S. 2430. On the same day, the Committee by voice vote ordered S. 2430, as amended, favorably reported.

SUMMARY OF MAJOR PROVISIONS

Section 3 of the bill makes several changes in the statute dealing with funding for the preference share program. First, it ensures that any funds appropriated before October 1, 1982 for the program shall remain available until expended. The purpose of this provision is to preserve $128 million in funds that have been appropriated, but which may not be obligated by the end of the fiscal year. This includes funds for the purchase of lines of the Rock Island Railroad; the rehabilitation of the St. Louis Southwestern Railway Company's Armourdale Yard at Kansas City, Kans.; the rehabilitation of the Milwaukee Road's former line operating between Ortonville, Minn. and Terry, Mont.; the rehabilitation of the Milwaukee Railroad's line connecting with the Ortonville line; and the restructuring of railroad facilities in the St. Louis Gateway area.

During the Committee's hearing on this program, the Federal Railroad Administrator testified that the Department of Transportation (DOT) would make every effort to obligate the funds for these and other projects before the expiration of the fiscal year. However, at the same time he indicated that there could be some delays for reasons over which the Department has little control. For example, in the case of lines being purchased from the trustee of the Rock Island, the parties must complete negotiations for the purchases and the Bankruptcy Court approve them before the applications for preference share funding can even be submitted. In view of the possibility of such delays, the Committee believes that the availability of funds appropriated to date should be kept from expiring at the end of the fiscal year. At the same time, the Committee wishes to emphasize that in so providing, it is not giving its endorsement to such delays; instead, we believe the Department and the parties involved in these various projects should make every effort to complete funding arrangements for them before the end of the fiscal year.

Section 3 also authorizes $100 million for this program, which is to remain available through fiscal 1985. Of this funding, 50 percent is to be reserved for the restructuring of railroad facilities in the St. Louis area.

The Committee believes that this authorization will be sufficient to help fund new and continuing railroad projects over the next 3 years. While we recognize that this authorization is lower than it has been in years past, testimony before the Committee indicated that most of the major railroad projects requiring Federal assistance have been

completed or are currently under way. The exception to this is the $120 million St. Louis Gateway project.

The Committee is recommending that approximately $50 million be set aside for the St. Louis Gateway for several reasons. First, the project is clearly a meritorious one, and one that would serve the interests of railroads and shippers throughout the country, as well as the immediate communities whose revitalization is dependent on the consolidation and improvement of the existing railroad facilities. Second, the Committee believes that this Federal assistance is necessary to ensure the cooperation of the railroads involved and to ensure completion of the project. Third, the Committee believes that Federal support for approximately 60 percent of the total capital needed for this project is in line with that provided for other railroad projects of this magnitude. The Committee fully expects, of course, that the railroads operating in the gateway will fund the remaining part of the project individually or through the Terminal Railroad Association.

The Committee is not suggesting that the remainder of the new authorization be earmarked for other particular projects. Funds should be available for meritorious but as yet undetermined projects. Also, the Committee believes the DOT ought to have some flexibility in determining what projects to fund. In fact the Committee would note that in the past a number of applications for worthy projects have been delayed because funds have not been available due to the tendency in the appropriations process to designate specific projects to be funded. One such application is the proposal by the Port of Beverly-Royal Slope in the State of Washington to purchase and operate a former Milwaukee Railroad line between Royal City and Othello, Wash. Because of this delay, the Port of Beverly-Royal Slope has been forced to proceed with the acquisition on the expectation that funds would become available only if other designated projects did not materialize. The Committee expects that the funds made available by this bill will be used to expedite the approval of applications such as for the Port of Beverly-Royal Slope project.

Estimated Costs

In accordance with paragraph 11(a) of rule XXVI of the Standing Rules of the Senate and section 403 of the Congressional Budget Act of 1974, the Committee provides the following cost estimate, prepared by the Congressional Budget Office:

U.S. Congress,
Congressional Budget Office,
Washington, D.C., May 10, 1982.

Hon. Bob Packwood,
Chairman, Committee on Commerce, Science and Transportation,
U.S. Senate, Dirksen Senate Office Building, Washington, D.C.

Dear Mr. Chairman: Pursuant to Section 403 of the Congressional Budget Act of 1974, the Congressional Budget Office has prepared the attached cost estimate for S. 2430, a bill to provide authorization of appropriations for railroad rehabilitation and improvement financing, and for other purposes.

Should the Committee so desire, we would be pleased to provide further details on this estimate.

Sincerely.

ALICE M. RIVLIN,
Director.

CONGRESSIONAL BUDGET OFFICE—COST ESTIMATE

1. Bill number: S. 2430.

2. Bill title: A bill to provide authorization of appropriations for railroad rehabilitation and improvement financing, and for other purposes.

3. Bill status: As ordered reported by the Senate Committee on Commerce, Science and Transportation, April 29, 1982.

4. Bill purpose: The bill would extend the authority of the Secretary of Transportation to issue notes to the Secretary of the Treasury in order to provide financial assistance to the railroads. The bill authorizes appropriations not to exceed $100 million to the Secretary of the Treasury in fiscal year 1983, for redeemable preference share financing under Title V of the Railroad Revitalization and Regulatory Reform Act of 1976 (4–R Act). Amounts appropriated are authorized to remain available until October 1, 1985. Fifty percent of the fiscal year 1983 appropriations are to be reserved for the East St. Louis area terminal project. The President's budget did not include an extension of the preference share program.

The bill allows previous appropriations scheduled to expire at the end of fiscal year 1982, but which may not be obligated by that time, to remain available until expended. The bill also amends the 4–R Act to provide that not more than 5 percent of the funds be reserved for the "feeder line" program, and reduces the cap set on funds used to rehabilitate former Conrail lines from 50 to 25 percent.

5. Cost estimate:

[By fiscal years; in millions of dollars]

Authorization level:	
1983	100
1984	-----
1985	-----
1986	-----
1987	-----
Estimated outlays:	
1983	25
1984	49
1985	66
1986	25
1987	-----

The costs of this bill fall within budget function 400.

6. Basis of estimate: Based on information from the Federal Railroad Administration, it was estimated that $65 million of the $128 million in currently available appropriations would not be obligated by the end of fiscal year 1982. The estimated outlays shown above include outlays from both the newly authorized $100 million and the $65 million in previous authority extended. The outlay estimate further assumes that the full amount of the new authorization will be appro-

priated by the beginning of fiscal year 1983, and that it will be fully obligated by October 1, 1985.

7. Estimate comparison: None.
8. Previous CBO estimate: None.
9. Estimate prepared by: Amy Dines.
10. Estimate approved by:

JAMES L. BLUM,
Assistant Director for Budget Analysis.

REGULATORY IMPACT STATEMENT

In accordance with paragraph 11(b) of rule XXVI of the Standing Rules of the Senate, the Committee provides the following evaluation of the regulatory impact of the legislation:

The legislation, as reported, extends by 3 years the authority of the Secretary of Transportation to issue notes to the Secretary of the Treasury in order to provide financial assistance to railroads and other financially responsible persons. It also authorizes additional appropriations for this financial assistance program. It will have no effect on the number of persons regulated or on the personal privacy of such persons. Further, it will have no effect on the cost of compliance with regulations or the amount of paperwork required for such compliance.

SECTION-BY-SECTION ANALYSIS

SECTION 1

This section amends section 505(e) of the Railroad Revitalization and Regulatory Reform Act (4–R Act) to eliminate reference to a study forwarded by the Department of Transportation to Congress back in 1976.

SECTION 2

This section amends section 507 of the 4–R Act to extend the authority of the Secretary of Transportation through fiscal 1985 to issue Rail Fund anticipation notes to the Secretary of the Treasury in order to provide financial assistance to railroads and other financially responsible persons. Under current law, this authority is scheduled to expire at the end of fiscal 1982.

SECTION 3

This section amends section 509(a) of the 4–R Act to provide that notwithstanding the fact that the current authorization for appropriations is scheduled to expire in fiscal 1982, any monies appropriated for the preference share program before that date shall remain available until expended.

It also authorizes additional appropriations of $100 million for fiscal years 1983 through 1985. Further, 50 percent of the appropriations are to be reserved for the St. Louis Gateway project.

SECTION 4

This section amends section 509(b) of the 4–R Act to provide that "not more" rather than "not less than" 5 percent of the funds appro-

priated shall be reserved for what is known as the "feeder line" program, established under the Staggers Rail Act for the purchase and rehabilitation of light density lines prior to abandonment. The Federal Railroad Administration has received no applications to date for the $3 million that has been reserved for this program; the change would free up those funds for other projects.

This section also reduces the cap set on funds to be used to rehabilitate former Conrail lines from "50 percent" to "25 percent." The higher number was provided for under the Northeast Rail Services Act of 1981, at a time when it was contemplated that Conrail would be broken up and sold off in pieces. Such a piecemeal sale is now unlikely.

Changes in Existing Law

In compliance with paragraph 12 of rule XXVI of the Standing Rules of the Senate, changes in existing law made by the bill, as reported, are shown as follows (existing law proposed to be omitted is enclosed in black brackets, new material is printed in italic, existing law in which no change is proposed is shown in roman):

The Railroad Revitalization and Regulatory Reform Act of 1976

Section 509 of That Act

REHABILITATION AND IMPROVEMENT FINANCING

SEC. 505. (a) * * *

(2) The Secretary shall act upon each such application within 6 months after the date on which all required information is received, except as otherwise provided in subsection (a) (2) of this section. The Secretary may approve any such application if he determines that providing the requested financial assistance is in the public interest. When making such a determination, the Secretary shall evaluate and consider in the following order of priority (A) the availability of funds from other sources at a cost which is reasonable under principles of prudent railroad financial management in light of the railroad's projected rate of return for the project to be financed and the railroad's rate of return on total capital (represented by the ratio which such carrier's net income, including interest on a long-term debt, bore to the sum of average shareholder's equity, long-term debt, and accumulated deferred income tax for fiscal year 1975) as determined in accordance with the uniform system of accounts promulgated by the Commission, (B) the interest of the public in supplementing such other funds as may be available in order to increase the total amount of funds available for railroad financing, and (C) the public benefits, including any significant railroad restructuring, to be realized from the project to be financed in relation to the public costs of such financing and whether the proposed project will return public benefits sufficient to justify such public costs or, where the application relates to a rail line owned or operated by the Corporation immediately prior to its acquisition by a railroad or financially responsible person (as defined in section 10910 (a) (1) of title 49, United States Code) for common carrier rail service, whether the financial assistance applied for under this section will

further the public interest in transferring rail lines from the Corporation to the private sector, and avoid the need for any further Federal subsidy. Except as provided in the last sentence of this paragraph, the Secretary in determining the extent to which a project will provide public benefits, shall give the highest priority to projects which will enhance the ability of the applicant carrier or other carriers to provide essential freight services. With respect to funds appropriated for financial assistance under this section which were authorized pursuant to section 803(a) and (b) of the Powerplant and Industrial Fuel Use Act of 1978, applications for such funds for the purpose of coal transportation shall be deemed to be for the provision of essential freight services. The Secretary, in granting financial assistance to any applicant, shall assign the highest priority, among applications for assistance which would return equal public benefits, to applications for assistance for providing safety improvements and signals, including underpasses or overpasses at railroad crossings at which injury or loss of life has frequently occurred or is likely to occur. The Secretary shall assign the highest priorities (*i*) to those meritorious applications of carriers operating under section 77 of the Bankruptcy Act unable to generate such funds in the private sector and (*ii*) to those meritorious applications for funds to provide for the restructuring of rail freight facilities and systems which handle more than two million rail cars annually, which are located in more than one State, and which are separated by the Mississippi River.

(3) * * *

(b) APPLICATION AND DETERMINATION.—(1) * * *

(c)-(d) * * *

(e) FUTURE PURCHASES OF REDEEMABLE PREFERENCE SHARES.—[The total par value of the redeemable preference shares which the Secretary may, after September 30, 1982, make commitments to purchase under this title, shall be determined by the Congress following the receipt by the Congress of the Secretary's recommendations as to the scope and sources of funding of the Fund or any recommended alternative financing mechanism, as submitted pursuant to section 504 of this title except that—] *With respect to the purchase of redeemable preference shares—*

(1) the amount of the Secretary's investment in redeemable preference shares in any fiscal year (out of proceeds other than those derived through the issuance and sale of Fund anticipation notes) shall not, when added to the amount of his prior investment in such shares, exceed 200 percent of the aggregate principal amount of the Fund bonds which (A) have been issued by the Secretary prior to such fiscal year, and (B) are projected to be issued by the Secretary through the end of such fiscal year; and

(2) neither redemptions of Fund bonds nor their payment at scheduled maturity shall have any bearing on the limitation in paragraph (1) of this subsection.

(f)-(h) * * *

SECTION 507 OF THE ACT

FUND ANTICIPATION NOTES

SEC. 507. (a) GENERAL.—The Secretary shall, until [September 30, 1982,] *September 30, 1985*, issue and sell, and the Secretary of the

Treasury until such date shall, to the extent of appropriated funds, purchase Fund anticipation notes in an aggregate principal amount of not more than $1,400,000,000, in order to provide financial assistance to railroads for such financing needs as the Secretary approves.

(b)-(c) * * *

(d) REMITTANCE AND TERMINATION.—If the Congress does not, on or before [September 30, 1982,] *September 30, 1985*, enact legislation of the type referred to in subsection (c) of this section, the Secretary shall hold in trust all redeemable preference shares issued by railroads employee or employee-shipper groups which are held in the Fund, and the Fund shall thereupon terminate.

SECTION 509 OF THAT ACT

SEC. 509. AUTHORIZATIONS.—(a) (*1*) There is authorized to be appropriated to the Secretary of the Treasury for the purposes of the Fund not to exceed $1,400,000,000 and the Secretary of the Treasury is authorized and directed to purchase, from time to time, prior to September 30, 1982, from the Secretary, out of such moneys in the Treasury as are appropriated under this sentence, Fund anticipation notes in such aggregate principal amounts, subject to the foregoing limitaton, as the Secretary may so offer for sale. No money in the Fund, regardless of source, shall be obligated, expended, or otherwise committed to any purpose from the Fund prior to or after September 30, 1980, without prior approval thereof in an annual appropriations Act. The Fund shall not qualify as one of the exceptions provided in section 401(d) of the Congressional Budget and Impoundment Control Act of 1974 (31 U.S.C. 1351(d)).

(*2*) *Notwithstanding the provisions of paragraph (1) of this subsection or any other provision of law, in order to carry out the purposes of the Fund—*

(A) moneys in the Fund derived from moneys appropriated to the Secretary of the Treasury under this subsection before October 1, 1982 shall remain available to the Secretary of Transportation until expended pursuant to section 507(a) of this title (45 U.S.C. 827(a)); and

(B) moneys appropriated to the Secretary of the Treasury under this subsection before October 1, 1982 shall remain available to the Secretary of Transportation until expended pursuant to section 507(a) of this title (45 U.S.C. 827(a)).

(*3*) (*A*) *There is authorized to be appropriated to the Secretary of the Treasury in fiscal year 1983, for the purposes of the Fund not to exceed $100,000,000. Amounts appropriated under this section are authorized to remain available until October 1, 1985.*

(B) Fifty percent of the funds received by the Secretary of the Treasury from amounts appropriated under subparagraph (A) of this paragraph shall be reserved and made available for meritorious applications regarding that restructuring of rail freight facilities and systems specified in the last sentence of section 505(b)(2)(ii) of this title (45 U.S.C. 825(b)(2)(ii)).

(b) (1) Not more than $200,000,000 of the funds received by the Secretary of Transportation from amounts appropriated under subsection [(a)] (*a*) (*1*) of this section shall be transferred by the Secre-

tary to the United States Railway Association for use by the Association in accordance with section 216(b)(3) of the Regional Rail Reorganization Act of 1973 (45 U.S.C. 726(b)(3)). Such funds shall be transferred immediately upon the finding by the Finance Committee under such section 216(b)(3).

(2) [Not less than] *Not more than* 5 percent of the funds received by the Secretary of Transportation from amounts appropriated under subsection (a) (excluding funds transferred under paragraph (1) of this subsection) shall be available for the purchase or rehabilitation of railroad lines acquired under section 10910 of title 49, United States Code, except that no such funds shall be available for the purchase or rehabilitation of such a railroad line unless such purchase or rehabilitation is consistent with the rail plan (as defined under section 5 of the Department of Transportation Act) of the State in which such line is located.

(3) Not more than [50 percent] *25 percent* of the funds received by the Secretary from amounts appropriated under subsection (a) of this section shall be reserved to provide rehabilitation and improvement assistance for facilities transferred from the Corporation after the effective date of the Northeast Rail Service Act of 1981.

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Calendar No. 577

97TH CONGRESS
2d Session

SENATE

REPORT
No. 97-407

NATIONAL SCIENCE FOUNDATION AUTHORIZATION ACT FOR FISCAL YEAR 1983

MAY 20 (legislative day, MAY 11), 1982.—Ordered to be printed

Mr. PACKWOOD, from the Committee on Commerce, Science, and Transportation, submitted the following

REPORT

[To accompany S. 2551]

The Committee on Commerce, Science, and Transportation, having considered an original bill (S. 2551) to authorize appropriations for the National Science Foundation for fiscal year 1983, reports favorably thereon and recommends that the bill do pass.

PURPOSE OF BILL

The bill authorizes appropriations, of $1089.5 million for the National Science Foundation for fiscal year 1983.

BACKGROUND

The National Science Foundation (NSF), alone among Federal agencies, has a statutory mandate to support basic research in all the sciences and engineering. By supporting the most challenging and most promising research which does not fall within the responsibilities of other Federal mission agencies, the NSF acts as a catalyst initiator, balance and synthesizer in the national research enterprise.

The NSF represents only a small part of the Federal support of research and development; less than 3 percent of approximately $36 billion in fiscal year 1982. Support of basic research by NSF is much larger however: about one-fifth of the Federal investment.

Most of the work of the Foundation is accomplished through grants, predominantly to colleges and universities, where the future discoverers and inventors are educated and stimulated in the process of conducting research. About 28 percent of the Federal research support to academic institutions is provided through the NSF.

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The National Science Foundation has no in-house laboratories. A relatively small staff of 1,200, including about 300 scientists and engineers, evaluate about 27,000 individual proposals each year of which slightly less than half are eventually supported. Proposal evaluation is accomplished by "peer review" which involves more than 30,000 scientists and engineers.

COMMITTEE ACTIONS AND RECOMMENDATIONS

On March 25 and April 19, 1982, the Subcommittee on Science, Technology, and Space held hearings on the proposed NSF program and budget for fiscal year 1983. The Subcommittee heard considerable testimony on the Foundation's plans and budgetary priorities; requirements for upgrading research instrumentation in colleges and universities; deficiencies and reforms in science and engineering education; the current state of research in the social and economic sciences; and the prospect for inducing greater cost sharing by industry and business of academic research and education in the sciences, mathematics and engineering. Witnesses included the Director and Associate Director of the Foundation, as well as representatives of the National Science Teachers Association, the National Academy of Sciences, the Committee for Economic Development, the National Engineering Action Council, and the National Society of Professional Engineers. Additional written testimony for the record was submitted by a number of educational organizations and scientific and engineering societies.

NATIONAL SCIENCE FOUNDATION BUDGET REQUEST AND COMMITTEE RECOMMENDATION

[By fiscal years, in millions of dollars]

Program	Actual fiscal year 1981	Current plan fiscal year 1982	NSF estimate fiscal year 1983	Committee recommended fiscal year 1983
Research and related activities:				
Mathematical and physical sciences	256.5	272.9	298.7	298.7
Engineering	86.3	92.0	99.7	99.7
Biological, behavioral and social sciences	185.6	176.0	186.7	191.7
Astronomical, atmospheric	236.0	240.0	259.7	259.7
Earth and ocean sciences:				
Ocean drilling programs	22.0	20.0	14.0	14.0
Antarctic research programs	67.4	66.0	86.4	86.4
Scientific, technoligical, international affairs	53.8	40.3	44.0	54.0
Program development management	59.2	63.5	63.1	63.1
Funding reconciliation	25.5	39.3	0	0
Subtotal	992.6	1,010.0	1,052.3	1,067.3
Science and engineering education	83.2	22.0	15.0	20.0
Special foreign currency	5.0	3.1	2.2	2.2
Total	1,080.8	1,035.1	1,069.5	1,089.5

RESEARCH AND RELATED ACTIVITIES

Mathematical and Physical Sciences

The goal of the mathematical and physical sciences (MPS) activity is to develop a fundamental understanding of the physical laws that govern the world and the universe in which we live. To further this goal, basic research activities are supported in the disciplines of mathematics, computer science, physics, chemistry, and materials.

The fiscal year 1983 budget authorization for the mathematical and physical sciences is $298.7 million, an increase of $25.8 million or 9.4 percent above the fiscal year 1982 current plan. Authorization will provide substantial real growth in computer science research and modest real growth in all other areas.

Engineering

The goals of the Foundation's engineering activity are to improve understanding of the fundamental questions driving engineering research, focus research attention in selected areas which are relevant to national problems and strengthen the infrastructure of the engineering research community.

The fiscal year 1983 budget authorization for engineering is $99.7 million, which represents an 8.4 percent increase ($7.7 million) above the fiscal year 1982 current plan. Authorizations will provide for significant increases for electrical, computer, and systems engineering, chemical and process engineering, and mechanical engineering and applied mechanics.

Biological, Behavioral and Social Sciences

The goal of the biological, behavioral, and social sciences (BBS) activity is to increase knowledge about life forms and life processes through research in biological and social phenonena.

The fiscal year 1983 budget authorization for the BBS is $191.7 million, an overall increase of $15.7 million (or 8.9 percent above the fiscal year 1982 current plan). This will provide modest increases in physiology, cellular and molecular biology, and environmental biology and a substantial increase in social and economic sciences.

Astronomical, Atmospheric, Earth and Ocean Sciences

The astronomical, atmospheric, earth, and ocean sciences activity supports research that increases our knowledge of the natural environment on earth and in space, and of the various affects of human activity upon this environment. The fiscal year 1983 budget authorization for astronomical, atmospheric, earth, and ocean sciences is $259.7 million, an increase of $19.7 million or 8.2 percent above the fiscal year 1982 current plan. The authorization will provide increases for astronomical sciences, atmospheric sciences, earth sciences, ocean sciences, and arctic research.

Ocean Drilling Programs

The objective of the Ocean Drilling Programs activity is to achieve an understanding of the detailed composition and behavior of the submerged portion of the earth's surface. It is an interdisciplinary science program that supports a unique worldwide effort to explore the earth's crust beneath the oceans.

The fiscal year 1983 budget authorization for ocean drilling programs is $14 million, a decrease of $6 million or 30 percent below the fiscal year 1982 current plan.

U.S. Antarctic Program

The U.S. Antarctic Program supports national goals to—maintain the Antarctic Treaty; ensure that the continent will continue to be used for peaceful purposes only; foster cooperative research to con-

tribute to the solution of regional and worldwide problems; protect the environment; and insure equitable and wise use of living and nonliving resources. Thus, the U.S. scientific research program continue to be the principal expression of national interest and policy in Antarctica.

The $86.4 million budget authorization for the U.S. Antarctica program is $20.4 million more than the fiscal year 1982 current plan, an overall increase of 30.9 percent.

Scientific, Technological and International Affairs

The goals of the Scientific, Technological, and International Affairs (STIA) activity are to: (1) link the performers of research with the users of research; (2) exchange scientific and technical information internationally and facilitate international cooperation; (3) serve science and technology decisionmakers and the public by providing policy-oriented data and information; and (4) strengthen the science and technology base by expanding opportunities for all qualified segments of the performing community to contribute to high quality research. The fiscal year 1983 budget authorization for STIA is $54 million, $13.7 million or 34 percent above the fiscal year 1982 current plan. Authorizations will provide substantial increases for industrial scientific and technological innovation, policy research and analysis, science resources studies and, in particular, coordinated agency-wide research activities.

Program Development and Management

The goal of the Program Development and Management activity is to achieve the most effective management of the NSF.

An authorization of $63.1 million is provided for this activity in fiscal year 1983, a decrease of $.4 million or 0.6 percent, below the fiscal year 1982 current plan.

SCIENCE AND ENGINEERING EDUCATION

The Foundation's education support has been designed:

To assure a stable flow of talented students into the science and engineering work force, with attention given to increasing the participation of minorities and women; and

To help citizens increase their understanding of science and technology to a level that enables them to meet effectively the requirements of contemporary society.

An authorization of $20 million is provided for this activity in fiscal year 1983, a decrease of $2 million or 9.1 percent from the fiscal year 1982 current plan. The authorization provides for maintaining the number of graduate fellowships at the same number as that in fiscal year 1982. In addition, the Committee endorses a focus on inservice training for secondary teachers of science and mathematics.

SPECIAL FOREIGN CURRENCY

The NSF supports scientific research and related activities in India and Pakistan by using U.S.-owned foreign currencies designated by the Department of Treasury as excess to normal U.S. Government requirements.

An authorization of $2.2 million is provided for this activity in fiscal year 1983, compared to $3.1 million in the fiscal year 1982 current plan, a decrease of $0.9 million or 29 percent.

Committee Views

The Committee has authorized funds totalling $1,089.5 million for the National Science Foundation in fiscal year 1983. Because the Committee supports the need to reduce Federal spending this total is very close to the administration's budget request. The NSF budget and programs have been examined to determine how they can best generate the science and technology needed to assure the Nation's prosperity and security while at the same time contributing to an overall national program of economic recovery.

In general the Committee agrees with the program and funding priorities of the administration and specifically with the Foundation's identification of its five most significant "opportunities and challenges":

Improving the state of the scientific and engineering research and instrumentation base;

Exploring and developing new links between academic institutions and private industry;

Reducing shortages of faculty in such fields as computer science and parts of engineering;

Expanding the personnel resources for science by attracting members of groups underrepresented in scientific and engineering research careers; and

Improving the quality of primary and secondary education in mathematics and the physical sciences.

The Committee recognizes that the above are national "opportunities and challenges" for State and local governments, local school, authorities, business and industry, professional societies, colleges and universities, as well as for the Federal Government. Of these groups, business and industry have both a large share of the resources and a clear stake in the manpower and knowledge pools which are influenced by the Foundation. It seems particularly appropriate therefore that the Federal Government and the private sector selectively pool their efforts where doing so will better serve the interests of both.

A conspicuously successful effort of this kind is the industry/university cooperative research projects of the Foundation's Scientific, Technological, and International Affairs activity. This program supports individual research projects jointly designed and implemented by industrial and university scientists and engineers. Proposals are submitted through and are subject to the peer review process of the standing science and engineering activities. Approved proposals are then subject to additional review in the industry/university cooperative research projects program. Successful proposals are funded jointly by the program and the originating science or engineering activity. Substantial cost sharing by the industry participant is also required.

The Committee believes that this principle of shared support between the NSF and industry, coupled with rigorous peer review, can

be applied widely to the "opportunities and challenges" identified by the Foundation. Section 2(c) of the bill provides that "$16,000,000 shall be available for industry/university cooperative projects, which will include research projects, research and instructional scientific equipment, fellowships, scholarships, and such other programs as the National Science Board may determine are appropriate to promote academic research and education in the sciences and engineering." The administration has proposed $6 million for industry/university cooperative research projects; the additional $10 million authorized by the Committee is primarily to widen the purposes of the program beyond "research projects."

It is the Committee's intent that the National Science Board will develop guidelines which are sufficiently flexible to encourage and accommodate innovative responses from the private sector. The guidelines should also encourage responses that are likely to be emulated even where Federal funds are not available. In this regard, the Committee notes with interest the recent offer to the NSF of a substantial number of microcomputers by their manufacturers for improving science and engineering education at the secondary and introductory college levels.

Testimony at the hearings held by the Committee suggests that an expectation of an initial response by the private sector in the range of $20 million is reasonable. If projects costs were shared equally by the NSF and the private sector, a dollar awarded under industry/university cooperative projects would require another $1 in other NSF programmatic funds and $2 dollars from the private sector. The National Science Board (NSB) should aim for substantial private sector cost sharing.

Science and engineering education is authorized at $20 million, $5 million above the NSF's fiscal year 1983 request. The Committee recognizes and welcomes the establishment by the NSB of the Commission on Pre-College Education in Mathematics, Science and Technology. Testimony at the Committee's hearing amply conveyed the deficiencies at this educational level with the attendant loss of opportunity for young men and women to prepare themselves for rewarding and nationally necessary careers in science, engineering and technology.

A year ago, this Committee noted in its report accompanying S. 1194, a bill to authorize the NSF for fiscal year 1982, that "the NSF now has an obligation and an opportunity to reexamine, redefine and reconstruct the science and engineering education program." The Committee regards the Commission as an appropriate response.

Concern remains though that the fiscal year 1983 request for science and engineering education is only for graduate fellowships: all other activities of the Science and Engineering Education Directorate would be terminated and the Directorate would be relegated to lower status. Last year the Committee noted that ". . . the problems of scientific and engineering education are all too real and pressing to abruptly and totally terminate the NSF programs." This remains the prevailing sentiment.

Additional funds are provided to maintain an educational activity pending the Commission's conclusions and recommendations. Regardless of what else results a clear and recognized need exists to upgrade

the subject matter competence of those science and mathematics teachers who are already in the ranks of our secondary schools. The Committee expects that this will be a high priority in the use of the $5 million.

It is also the hope of the Committee that the industry/university cooperative program will encourage and support innovative proposals that may directly affect science and engineering education.

A total of $191.7 million is authorized for the biological, behavioral, and social sciences, or $5 million more than the fiscal year 1983 request. It is the view of the Committee that cuts in support of the social and economic sciences last year were disproportionate and these additional funds are intended to restore a better balance. There is also a feeling that the highest priority should be design and establishment of sound data bases, as the most necessary prerequisite for sound theoretical research.

The Committee notes the substantial changes in the ocean drilling programs with the withdrawal of petroleum companies as partners. With the endorsement of the NSB, a proposal has been made to convert the Glamor Explorer for use as a deep ocean drilling vessel. Strong support from the scientific community for the conversion leads the Committee to encourage the Foundation and the administration to request reprograming of the funds necessary in fiscal year 1983 to initiate the advanced ocean drilling program and to begin the conversion of Glamor Explorer for use in this program.

Estimated Costs

In accordance with paragraph 11(a) of rule XXVI of the Standing Rules of the Senate and section 403 of the Congressional Budget Act of 1974, the Committee provides the following cost estimate, prepared by the Congressional Budget Office:

U.S. Congress,
Congressional Budget Office,
Washington, D.C., May 13, 1982.

Hon. Bob Packwood,
Chairman, Committee on Commerce, Science, and Transportation, U.S. Senate, Washington, D.C.

Dear Mr. Chairman: Pursuant to Section 403 of the Congressional Budget Act of 1974, the Congressional Budget Office has prepared the attached cost estimate for the National Science Foundation Authorization Act for Fiscal Year 1983.

Should the Committee so desire, we would be pleased to provide further details on this estimate.

Sincerely,

Alice M. Rivlin,
Director.

Congressional Budget Office—Cost Estimate

May 13, 1982.

1. Bill number: Not yet assigned.
2. Bill title: National Science Foundation Authorization Act for Fiscal Year 1983.

3. Bill status: As ordered reported by the Senate Committee on Commerce, Science, and Transportation, May 11, 1982.

4. Bill purpose: The bill authorizes the appropriation to the National Science Foundation of $1,089 million for fiscal year 1983. Of this amount, $1,067 million is authorized for research and related activities programs, $20 million is authorized for science and engineering education programs, and $2 million is authorized for the special foreign currencies program.

Additionally, the bill permits the transferral of funds among certain programs, provides that the National Science Board make periodic reports to the President, establishes new guidelines for special commissions, eliminates the NSF Resource Center for Science and Engineering, repeals the provisions of the NSF Act of 1950 prohibiting employees from holding patents resulting from NSF-related work, and deletes the section of the NSF Authorization Act of Fiscal Year 1978 regarding employee financial disclosures.

The $1,089 million authorized represents an increase of $20 million over the President's request for fiscal year 1983, excluding the President's request for the Minority Institutions Science Improvement Program, which was proposed to be transferred from the Department of Education. This difference results mostly from an increase of $10 million for scientific, technological, and international affairs relative to the President's request.

5. Cost estimate:

	Millions
Authorization level:	
Fiscal year:	
1983	$1,089
1984	------
1985	------
1986	------
1987	------
Estimated outlays:	
Fiscal year:	
1983	564
1984	368
1985	96
1986	61
1987	------

Including outlays from prior years' appropriations, total 1983 outlays are estimated to be $987 million, assuming appropriation of the authorized amount.

The costs of this bill fall within budget function 250.

6. Basis of estimate: For the purposes of this estimate, it is assumed that the full amount authorized for fiscal year 1983 is appropriated. It is also assumed that the distribution of funds among NSF programs as stated in the bill is maintained. The estimate of annual outlays is based on historical spending patterns for NSF programs.

7. Estimate comparison: None.

8. Previous CBO estimate: On April 21, 1982, CBO prepared a cost estimate for H.R. 5842, the National Science Foundation Authorization Act for Fiscal Years 1982 and 1983, as ordered reported by the House Committee on Science and Technology. That bill authorized funds for fiscal year 1982 above that already appropriated, and authorized $1,099 million for the NSF in fiscal year 1983, $10 million more than this bill. H.R. 5842 also provided a specific amount for modernizing research equipment and facilities and allowed withdrawal of funds

from the International Institute for Applied Systems Analysis upon notification by the President that participation is contrary to national security interests.

On May 10, 1982, CBO prepared a cost estimate for S. 2349, the National Science Foundation Authorization Act for Fiscal Year 1983, as ordered reported by the Senate Committee on Labor and Human Resources, April 27, 1982. S. 2349 differed from the Senate Committee on Commerce, Science, and Transportation bill in authorizing $10 million less for the scientific, technological, and international affairs program but $5 million more for science and engineering education activities.

9. Estimate prepared by: Steve Martin.

10. Estimate approved by:

JAMES L. BLUM,
Assistant Director for Budget Analysis.

REGULATORY IMPACT STATEMENT

In accordance with paragraph 11(b) of rule XXVI of the Standing Rules of the Senate, the Committee provides the following evaluation of the regulatory impact of the legislation:

The bill provides authorization of appropriations to the National Science Foundation for fiscal year 1983 and extends for 1 year existing programs supported by the National Science Foundation. As a practical matter no new regulations will be promulgated by any program as a result of any direct mandate contained in this legislation.

SECTION-BY-SECTION ANALYSIS

Section 1.—Short title

Section 1 sets forth the short title of the bill, the "National Science Foundation Authorization Act for Fiscal Year 1983".

Section 2.—Authorized appropriations

Authorizes a total of $1,089.5 million in nine categories:

1. Mathematical and physical sciences, $298,700,000;
2. Engineering, $99,700,000;
3. Biological, behavioral, and social sciences, $191,700,000;
4. Astronomical, atmospheric, earth and ocean sciences, $259,700,000;
5. Ocean drilling programs, $14 million;
6. Antarctic research programs, $86,400,000;
7. Scientific, technological, and international affairs, $54 million;
8. Program development and management, $63,081,000; and
9. Science and engineering education, $20 million.

$16 million of those funds in category 7 will be available for industry/university cooperative programs in research, instrumentation, fellowships and such other purposes as the National Science Board may determine will best promote academic research and education.

Section 3.—Availability of appropriations

Stipulates periods under which appropriations in sections 2 and 5 will remain available for obligation.

Section 4.—Discretionary funds

Authorizes discretionary funds of $2,500 for fiscal year 1983 for the Director of NSF.

Section 5.—Foreign currencies

Authorizes no more than $2,200,000 in excess foreign currencies for fiscal year 1983 for expenses of the NSF incurred outside the United States.

Section 6.—Transfer of funds

Provides authority for transfer of up to 10 percent of the category amounts authorized in section 2, subject to review and approval by the authorizing committees of the House and Senate.

Section 7.—Reporting and miscellaneous amendments

The National Science Board shall keep the President and Congress informed on specified science matters. Certain housekeeping amendments are provided to existing legislation.

Changes in Existing Law

In accordance with paragraph 12 of rule XXVI of the Standing Rules of the Senate, changes in existing law made by the bill, as reported, are shown as follows (existing law proposed to be omitted is enclosed in black brackets; new matter is printed in italic; and existing law in which no change is proposed is shown in roman):

The National Science Foundation Act of 1950

Section 4 of That Act

NATIONAL SCIENCE BOARD

SEC. 4. (a)-(i) * * *

[(j) Annual report. The Board shall render an annual report to the President, for submission to the Congress on or before March 31 in each year. Such report shall deal essentially, though not necessarily exclusively, with policy issues or matters which affect the Foundation or with which the Board in its official role as the policymaking body of the Foundation is concerned.]

(j)(1) The Board shall periodically render to the President, for submission to the Congress, a report on indicators of the state of science and engineering in the United States.

(2) The Board shall render to the President, for submission to the Congress, reports on policy matters related to research and education in science and engineering, as the Board, the President, or Congress determines the need for such reports.

Section 9 of That Act

[SPECIAL COMMISSIONS

[SEC. 9. (a) Each special commission established pursuant to section 4(i) shall consist of eleven members appointed by the Board, six of whom shall be eminent scientists and five of whom shall be persons

other than scientists. Each special commission shall choose its own chairman and vice chairman.

[(b) It shall be the duty of each such special commission to make a comprehensive survey of research, both public and private, being carried on in its field, and to formulate and recommend to the Foundation at the earliest practicable date an over-all research program in its field.]

SPECIAL COMMISSIONS

SEC. 9. (a) Each special commission established under section 4(h) shall be appointed by the Board and shall consist of such members as the Board considers appropriate.

(b) Special commissions may be established to study and make recommendations to the Foundation on issues relating to research and education in science and engineering.

SECTION 12 OF THAT ACT

Sec. 12. Patent rights

[(a)] Each contract or other arrangement executed pursuant to this Act which relates to scientific research shall contain provisions governing the disposition of inventions produced thereunder in a manner calculated to protect the public interest and the equities of the individual or organization with which the contract or other arrangement is executed: *Provided, however,* That nothing in this Act shall be construed to authorize the Foundation to enter into any contractual or other arrangement inconsistent with any provision of law affecting the issuance or use of patents.

[(b) No officer or employee of the Foundation shall acquire, retain, or transfer any rights, under the patent laws of the United States or otherwise, in any invention which he may make or produce in connection with performing his assigned activities and which is directly related to the subject matter thereof: *Provided, however,* That this subsection shall not be construed to prevent any officer or employee of the Foundation from executing any application for patent on any such invention for the purpose of assigning the same to the Government or its nominee in accordance with such rules and regulations as the Director may establish.]

THE NATIONAL SCIENCE FOUNDATION AUTHORIZATION ACT, FISCAL YEAR 1978

SECTION 6 OF THAT ACT

[SEC. 6. (a) The National Science Foundation shall establish a Resource Center for Science and Engineering to be located at an educational institution which—

[(1) enrolls substantial numbers of minority students, students from low-income families, or both;

[(2) is geographically located near one or more population centers of low-income families or minority groups;

[(3) demonstrates a commitment to encouraging and assisting minority students or students from low-income families, or both; and

[(4) has an existing or developing capacity to offer doctoral programs in science and engineering.

[(b) The Center established under this section shall—

[(1) support basic research and the acquisition of necessary research facilities and equipment;

[(2) serve as a regional resource in science and engineering for the community which the Center serves; and

[(3) develop joint educational programs with nearby pre-college and undergraduate institutions which enroll a substantial number of minority students or students from low-income families.]

SECTION 10 OF THAT ACT

[SEC. 10. (a)(1) Each officer or employee of the National Science Foundation who performs a decisionmaking function in the handling of any application or proposal for a grant from or contract with the Foundation shall provide a written statement for the record identifying (in accordance with the standards promulgated under subsection (b)) any financial interest or other relevant interest he or she has in the person submitting the application or proposal and any academic affiliation he or she has with that person. If the application or proposal results in an award, the statement shall be made available to the public.

[(2) The Director shall remove or take other appropriate disciplinary action against any employee who knowingly violates the requirements of this subsection.

[(b)(1) Within 60 days after the date of the enactment of this Act, the Director of the National Science Foundation shall publish—

[(A) proposed standards to implement the requirements of subsection (a), designed to minimize conflicts of interest and to assure that the appropriate files of the Foundation relating to any grant or contract referred to in such subsection contain a statement of any financial or other relevant interest which any of the officers and employees involved may have in the person or institution applying for or proposing the grant or contract as well as any academic affiliation which any of such officers and employees may have with such person or institution; and

[(B) proposed standards appropriately requiring identification of any conflicts of interest by peer reviewers.

[(2) Within 120 days after the date of the enactment of this Act, the Director shall promulgate the standards published under paragraph (1), with such modifications as the Director may deem appropriate; and such standards shall take effect upon their promulgation.

[[(c) Repealed.]

[(d) If the President issues an Executive order that requires financial disclosure by officers and employees of Federal agencies generally, only so much of this section as relates to peer reviewers and to academic affiliations of officers and employees shall remain effective.]

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